REMARKS

Claims 25-28 and 37-58 were considered by the Examiner. Claims 27, 28, 40, 43, 46, 49, 52, 55, and 58 were allowed. Each of claims 45 and 47 was objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 25, 26, 37-39, 41, 42, 44, 48, 50, 51, 53, 54, 56, and 57 were rejected under 35 U.S.C. 103(a) as being unpatentable. In this response, claims 48-50 and 57 have been amended, but no claims have been cancelled or added. Therefore, claims 25-28 and claims 37-58 are still pending.

Rejections under 35 U.S.C. 103

Claims 25, 26, 37-39, 41, 48, 50, 51, 53, 54, 56, and 57 were rejected under 35 U.S.C. 103(a) as being unpatentable over Usui in view of U.S. Patent No. 4,999,314 issued to Pribat et al. ("Pribat") and U.S. Patent No. 5,362,682 issued to Bozler et al. ("Bozler"). Claims 42 and 44 were rejected under 35 U.S.C. 103(a) as being unpatentable over Usui in view Pribat, Bozler and U.S. Patent No. 5,592,501 issued to Edmond et al. ("Edmond"). For the reasons that follow, Applicant respectfully traverses the above rejection.

Claim 25

Claim 25 recites a plurality of patterned masks containing a material having a growth suppressing material and a plurality of nitride semiconductor layers on a substrate. As recited in claim 25, the (n+1)-th patterned mask is substantially provided above an opening of the n-th patterned mask. Furthermore, the (n+1)-th nitride semiconductor layer is formed on or above the lower substrate via the (n+1)-th patterned mask. Moreover, the direction of the stripe of the n-th patterned mask is twisted from the direction of the stripe of the (n+1)-th patterned mask.

Applicant submits that Usui fails to disclose or suggest such an arrangement. Usui merely discloses a patterned masked in a direction of <11-20>, but does not disclose a patterned mask in any other direction. Furthermore, Usui does not disclose the above cited limitation

regarding the twisting direction of the n-th and (n+1)-th patterned mask stripes. The Office Action states that the "layers of Usui are formed in different plane directions (results paragraph 2), thus they are 'twisted' or angled from each other." It is to be noted, however, that the layers in Usui are nitride semiconductor layers, not patterned masks. It is further to be noted that the twisting recited in claim 25 refers to that between stripes of patterned masks, not nitride semiconductor layers.

The Office Action also states that Pribat in Figure 14 teaches a "second mask (n+1) substantially over the opening in the lower mask and at an angle." Applicant respectfully submits that Figure 14 of Pribat does not show that the masks are patterned in a stripe shape and that the direction of one stripe is twisted from that of the other stripe. Furthermore, the other portion of Pribat cited in the Office Action as disclosing the present invention as claimed, more specifically Figure 54 and column 12, line 27 to column 13, line 16, also fails to disclose or suggest the present invention as claimed. This portion of Pribat teaches on a substrate a first insulation layer with openings and a second insulation layer with openings. The first and second insulation layers are achieved by a dielectric material. However, Pribat does not teach the second insulation layer provided substantially above the openings of the first insulation layer wherein the first and second insulation layer are respectively patterned in a stripe shape, and a direction of the stripe shape of the first insulation layer is twisted from a direction of the stripe of the second layer.

Similarly, Bozler does not disclose or suggest the (n+1)-th patterned mask is substantially provided above the openings of the n-th patterned mask wherein the n-th and (n+1)-th patterned masks are respectively patterned in a stripe shape, and a direction of the stripe of the n-th patterned mask is twisted from a direction of the stripe of the (n+1)-th patterned mask.

Thus, at least for the foregoing reasons, applicant respectfully submits that claim 25 is patentable over the cited prior art.

Claims 26, 39, 42, 45, 48, 51, and 54

Claims 26, 39, 42, 45, 48, 51, and 54 are dependent on claim 25. Therefore, it is respectfully submitted that claims 26, 39, 42, 45, 48, 51, and 54 are patentable at least for the reasons set forth above with respect to the patentability of claim 25. Furthermore, some of these claims recite additional limitations that are not disclosed or suggested by the cited prior art. For example, claim 39 recites that "a width of the stripe of the (n+1)-th patterned mask is equal to or larger than a width of the stripe of the n-th patterned mask." Usui discloses patterned masks of the same level within the same step. However, it fails to disclose or suggest patterned masks of one step being of equal or larger width than those of another step. Also, for example, claim 48, as amended, recites that "the n-th and the (n+1)-th patterned masks are formed of the same material." Usui fails to disclose or suggest this limitation, but merely discloses an arrangement where nitrogen semiconductor layers are formed of the same material. Similarly, for example claim 51 recites that "the thickness of the n-th and (n+1)-th masks are the same as each other." Usui fails to disclose or suggest this limitation, but merely discloses an arrangement with two nitrogen semiconductor layers that have the same thickness as each other.

Claim 37

Claim 37 teaches an (n+1)-th patterned mask containing a material having a growth suppressing material substantially provided above an opening of an n-th patterned mask, wherein the first to (n+1)-th patterned masks are patterned in such a manner that a combination of the first to (n+1)-th patterned masks covers the entire surface of the lower substrate. The Office Action states that in the prior art, presumably Usui, "masks are also formed over the entire substrate surface (figure 1)." Figure 1 of Usui, however, shows that the mask (SiO_2) does not cover the entire surface of the substrate. Please see the gaps between the 1 to 4 μm wide portions of the mask (SiO_2) in Figure 1 of Usui.

Thus, at least for the foregoing reasons, applicant respectfully submits that claim 37 is patentable over the cited prior art.

Claims 38, 41, 44, 47, 50, 53, and 56

Claims 38, 41, 44, 47, 50, 53, and 56 are dependent on claim 37. Therefore, it is respectfully submitted that claims 38, 41, 44, 47, 50, 53, and 56 are patentable at least for the reasons set forth above with respect to the patentability of claim 37. Furthermore, some of these claims recite additional limitations that are not disclosed or suggested by the cited prior art. For example, claim 41 recites that "a width of the stripe of the (n+1)-th patterned mask is equal to or larger than a width of the stripe of the n-th patterned mask." Usui discloses patterned masks of the same level within the same step. However, it fails to disclose or suggest patterned masks of one step being of equal or larger width than those of another step. Also, for example, claim 50, as amended, recites that "the n-th and the (n+1)-th patterned masks are formed of the same material." Usui fails to disclose or suggest this limitation, but merely discloses an arrangement where nitrogen semiconductor layers are formed of the same material. Similarly, for example claim 53 recites that "the thickness of the n-th and (n+1)-th masks are the same as each other." Usui fails to disclose or suggest this limitation, but merely discloses an arrangement with two nitrogen semiconductor layers that have the same thickness as each other.

Claim 57

Claim 57, as amended, recites that "the stripe width of the (n+1)-th patterned mask is the same as that of the n-th patterned mask or is smaller than a size of the respective opening of the n-th patterned mask." Support for this amendment can be found, for example, on page 24, line 18 to page 27, line 1. Applicant submits that the cited prior art does not disclose or suggest the above limitation.

Thus, at least for the foregoing reasons, applicant respectfully submits that claim 57 is patentable over the cited prior art.

CONCLUSION

In view of the foregoing, Applicant respectfully submits that all the pending claims patentably define the subject invention over the cited prior art. Accordingly, Applicant respectfully requests allowance of the pending claims at the earliest possible date.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**VERSION WITH MARKINGS TO SHOW CHANGES MADE**".

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, Applicant petitions for any required relief including extensions of time and authorizes the Assistant Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. 299002048410.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the claims:

Claims 48-50 have been amended as follows:

48. (Once Amended) A semiconductor substrate according to claim 25, wherein the n-th[,] and (n+1)-th patterned masks are formed of the same material.

49. (Once Amended) A semiconductor substrate according to claim 27, wherein the n-th[,] and (n+1)-th patterned masks are formed of the same material.

50. (Once Amended) A semiconductor substrate according to claim 37, wherein the n-th[,] and (n+1)-th patterned masks are formed of the same material.

57. (Once Amended) A semiconductor substrate comprising:

an n-th patterned mask containing a material having a growth suppressing effect, provided on or above a lower substrate, wherein n is an integer of 1 or more;

an n-th nitride semiconductor crystal layer grown on or above the lower substrate via the n-th mask; and

an (n+1)-th patterned mask containing a material having a growth suppressing material substantially provided above an opening of the n-th patterned mask; and an (n+1)-th nitride semiconductor crystal layer grown on or above the lower substrate via the (n+1)-th patterned mask,

wherein the n-th patterned mask and the (n+1)-th patterned mask are respectively patterned in a stripe shape; and

wherein the stripe width of the (n+1)-th patterned mask is the same as that of the n-th patterned mask or is smaller than a size of the respective opening of the n-th patterned mask.

Serial N . 09/904,162
Docket No. 299002048410
Client Reference F5-01036566/98R00662-3/US/END

sf-1464123